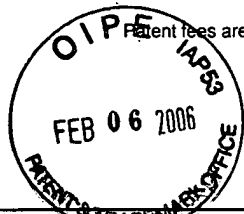


# FEE TRANSMITTAL

Patent fees are subject to annual revision.



## Complete If Known

Application Number	09/976,274
Filing Date	15 October 2001
First Named Inventor	HYUN-SOO PARK
Examiner Name	WANG, JIN-CHENG
Group/Art Unit	2672
Attorney Docket No.	P56597

TOTAL AMOUNT OF PAYMENT

(\$ 500.00)

## METHOD OF PAYMENT (check one)

### 1. Payment Enclosed:

(CHECK #50376)

☒ Check ☐ Credit Card ☐ Money Order  
☐ Other

☐ Charge Any Additional Fee Required Under 37 C.F.R. §1.16 and 1.17.

☐ Applicant claims small entity status. See 37 CFR 1.27

2. The Commissioner is hereby authorized to charge any deficiency and credit any over payments to:

Deposit Account Number: 02-4943

## FEE CALCULATION

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
<b>EXTENSION OF TIME FEES</b>					
1251	120	2251	60	Extension for reply within first month	\$
1252	450	2252	225	Extension for reply within second month	\$
1253	1020	2253	510	Extension for reply within third month	\$
1254	1590	2254	795	Extension for reply within fourth month	\$
1255	2160	2255	1080	Extension for reply within fifth month	\$
<b>APPEAL</b>					
1401	500	2401	250	Notice of Appeal	\$
1402	500	2402	250	Filing a brief in support of an appeal	\$500.00
1403	1000	2403	500	Request for oral hearing	\$
<b>CLAIMS</b>					
1201	200	2201	100	Independent claims in excess of 3 (** - 3 = ** extra x \$200 = **)	\$
1202	50	2202	25	claims in excess of 20 (** - 20 = ** extra x \$50 = **)	\$
Other Fee (specify) _____					\$
Other Fee (specify) _____					\$
Other Fee (specify) _____					\$

## FEE CALCULATION

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
<b>MISCELLANEOUS</b>					
1801	\$790	2801	\$395	Request for continued examination (RCE)	\$
1806	\$180			Submission of an IDS	\$
1814	\$130	2814	\$65	Statutory disclaimer	\$
8021	\$40			Recordation of assignment per property	\$
<b>TRADEMARK</b>					
6001/7001			\$335	Application for registration, per class	\$
6002/7002			\$100	Amendment to Allege Use, per class	\$
6003/7003			\$100	Statement of Use, per class	\$
6004/7004			\$150	Request for six-month extension of time, per class	\$
6205/7205			\$100	\$8 affidavit, per class	\$
6208/7208			\$200	\$15 affidavit, per class	\$
6201/7201			\$400	Application for renewal, per class	\$
6403/7403			\$100	Ex parte appeal, per class	\$
<b>PETITION</b>					
1462			\$400	Petitions to Director (Group I)	\$
1463			\$200	Petitions to Director (Group II)	\$
1464			\$130	Petitions to Director (Group III)	\$
1452	\$500	2452	\$250	Petitions to revive unavoidably abandoned application	\$
1453	\$1500	2453	\$750	Petitions to revive unintentionally abandoned application	\$
<b>PATENT MAINTENANCE</b>					
1551	\$900	2551	\$450	Due at 3.5 years	\$
1552	\$2300	2552	\$1150	Due at 7.5 years	\$
1553	\$3800	2553	\$1900	Due at 11.5 years	\$
Other Fee (specify) _____					\$
Other Fee (specify) _____					\$
Other Fee (specify) _____					\$

SUBTOTAL: LEFT COLUMN \$500.00

SUBTOTAL: RIGHT COLUMN \$0.00

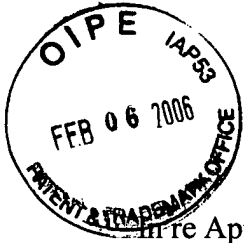
## SUBMITTED BY

## Complete (if applicable)

Typed or Printed Name	Robert E. Bushnell, Esq.	Reg. Number	27,774
Signature		Date	6 February 2006
		Deposit Account User ID	

REB/sb

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.



PATENT  
P56597

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

HYUN-SOO PARK

Serial No.: 09/976,274

Examiner: WANG, JIN-CHENG

Filed: 15 October 2001

Art Unit: 2672

For: DISPLAY APPARATUS CAPABLE OF INDICATING A PICTURE-IN-PICTURE  
FUNCTION IN MONITOR (*as amended*)

**TRANSMITTAL OF APPELLANT'S BRIEF FEE**

**Mail Stop: Appeal Brief-Patents**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Accompanying this transmittal is a check drawn to the Commissioner of Patents and Trademarks in the amount of \$500.00 for filing an Appeal Brief in support of a Notice of Appeal filed on 5 December 2005.

Should any additional fees be incurred, the Commissioner is authorized to charge Deposit Account No. 02-4943 in that amount. Please inform the Applicant of any transactions involving the Deposit Account.

Respectfully submitted,

Robert E. Bushnell

Reg. No.: 27,774

1522 "K" Street, N.W., Suite 300  
Washington, D.C. 20005  
(202) 408-9040

Folio: P56597

Date: 2/6/06

I.D.: REB/sb



PATENT  
P56597

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS AND INTERFERENCES**

In re Application of:

HYUN-SOO PARK

Appeal No. \_\_\_\_\_

Serial No.: 09/976,274

Examiner: WANG, JIN-CHENG

Filed: 15 October 2001

Art Unit: 2672

For: DISPLAY APPARATUS CAPABLE OF INDICATING A PICTURE-IN-PICTURE  
FUNCTION IN MONITOR (*as amended*)

**Attn: Board of Patent Appeals & Interferences**

**APPEAL BRIEF**

**Mail Stop: Appeal Brief - Patents**

Board of Patent Appeals and Interferences  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Pursuant to the appellant's Notice of Appeal filed on 5 December 2005, the appellant hereby appeals to the Board of Patent Appeals and Interferences from the final rejections of claims 1-20 as set forth in the Advisory Action (Paper No. 20051130) mailed on 2 December 2005. The Appeal Brief is being submitted in triplicate. An Amendment is concurrently being submitted for the purpose of the appeal herewith.

Folio: P56597  
Date: 2/6/06  
I.D.: REB/SS/sb

## **I. REAL PARTY IN INTEREST**

Pursuant to 37 CFR §41.37(c)(1)(as amended), the real party in interest is:

Samsung Electronics Co., Ltd.  
#416, Maetan-dong, Yeongtong-gu, Suwon-si,  
Gyeonggi-do, Republic of KOREA

as evidenced by an Assignment by the inventor, executed on 19 November 2001, and recorded in the U.S. Patent and Trademark Office on 26 November 2001 at Reel 012318, Frame 0892.

## **II. RELATED APPEALS AND INTERFERENCES**

There is no other appeal or interference known to the appellant, appellant's legal representatives, or assignee, which will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

## **III. STATUS OF CLAIMS**

Claims 1-20 are pending in this application. All of the pending claims 1-20 stand finally rejected as stated in the Advisory Action (Paper No. 20051130) mailed on 2 December 2005.

Appellant here appeals from the final rejection of claims 1-20.

## **IV. STATUS OF AMENDMENTS**

An Amendment After Final was filed on 1 September 2005, and entered by the Examiner in the Advisory Action (Paper No. 20051130) mailed on 2 December 2005.

## **V. SUMMARY OF CLAIMED SUBJECT MATTER**

In conformance with 37 C.F.R. §41.37(c)(1)(v), independent claims 1, 10 and 16 are directed to an apparatus for processing a signal while independent claim 6 concerns the method for processing the signal. The following is a concise explanation of the subject matter defined in each of the independent claims involved in the appeal.

The apparatus includes a signal dispensing unit, signal processing unit, an outputting unit and a monitor. A signal conversion unit is also noted to be included in the apparatus along with a decoding unit and scan rate conversion unit.<sup>1</sup>

Referring to FIG. 2, the apparatus includes an ADC (analog to digital converter) 21 for converting an analog signal output from a personal computer 20 into a digital signal, a decoding unit 23 for converting a signal from a television or video 22 into a digital signal and decoding the same, a scan rate conversion unit 24 for changing a scan rate of the decoded signal from the television or video 22, a signal processing unit 25 for performing the picture-in-picture (PIP) function of displaying one of the personal computer (PC) 20 signal output from the ADC 21 and the television or video 22 signal output from the scan rate conversion unit 24 on the main screen and displaying the other on a plurality of sub-screens, or processing the television or video signal to be displayed, a DAC (digital to analog converter) 26 for converting an output signal generated from the signal processing unit 25 into an analog signal, an outputting (switching) unit 27 for outputting the analog signal output from the personal computer 20 when only the personal computer 20 signal is displayed and outputting a signal output from the DAC 26 when both the PC 20 signal and the television or

---

<sup>1</sup>Original Specification, paragraphs 9-10, page 3, line 1 - page 4, line 3.

video 22 signal are displayed using the picture-in-picture function, an amplifying unit 28 for amplifying a signal output from the outputting unit 27, and a color display tube 29 for displaying the amplified signal.<sup>2</sup>

The apparatus for processing a signal in the monitor is operated largely in three modes as follows.<sup>3</sup>

In the first mode, the color display tube 29 displays a signal from the personal computer 20 without modification. A signal from the personal computer 20 is selected by inputting an outputting (switching) control signal to the outputting unit 27. The selected signal from the personal computer 20 is amplified by the amplifying unit 28 and output to the color display tube 29. A signal dispensing unit 40 for dispensing a pure analog signal output from the personal computer 20 and a digital signal passing through the ADC 21 is included in the apparatus. In the first mode, the analog signal from the personal computer 20 is output from the signal dispensing unit 40.<sup>4</sup>

In the second mode, a signal from the television or video unit 22 is converted into a digital signal and decoded in the decoding unit 23. For smoothly processing a signal, a scan rate of the decoded signal from the television or video is changed by the scan rate conversion unit 24. The television or video 22 signal whose scan rate is changed is scaled in the signal processing unit 25 to be displayed on the CDT 29. The scaled television or video 22 signal passes through the DAC 26 and is then converted into an analog signal. A signal output from the DAC 26 is selected by

---

<sup>2</sup>Original Specification, paragraph 14, page 4, line 14 - page 5, line 10.

<sup>3</sup>Original Specification, paragraph 15, page 5, lines 11-12.

<sup>4</sup>Original Specification, paragraph 16, page 6, lines 6-12.

inputting an outputting control signal to the outputting unit 27. The selected signal from the PC 20 is amplified in the amplifying unit 28 and output to the CDT 29.<sup>5</sup>

In the third mode, at least two signals are displayed (PIP function) at the same time, *i.e.*, the signals of the PC 20 and the TV/video 22 are displayed at the same time.<sup>6</sup>

According to one embodiment of the third mode, a digital signal output by the PC 20 is output from the signal dispensing unit 40 to the signal processing unit 25. The signal from the TV/video 22 passes through the decoding unit 23 and the scan rate conversion unit 24 and is output to the signal processing unit 25. In this mode, the signal processing unit 25 selects a main screen and sub-screens, processes a signal to correspond to a selected screen and processes a scaling for displaying the signal.<sup>7</sup>

In another embodiment of the third mode, a signal from the PC 20 and a signal from the TV/video are displayed, one on the main screen and the other on a sub-screen. A PIP signal generated from the signal processing unit 25 is converted into an analog signal in the DAC 26. In this mode, a signal output from the DAC 26 is selected by inputting an outputting control signal to the outputting unit 27. The selected signal from the PC 20 is amplified in the amplifying unit 28 and output to the CDT 29. The function of the outputting unit 27 is the same in the second and third modes, *i.e.*, it is controlled to switch an output signal of the DAC 26. However, the function of the DAC 26 is not the same. That is, the DAC 26 outputs the scaled signal of the PC 20 to be displayed

---

<sup>5</sup>Original Specification, paragraph 17, page 6, line 13 - page 7, line 6.

<sup>6</sup>Original Specification, paragraph 18, page 7, lines 7-8.

<sup>7</sup>Original Specification, paragraph 18, page 7, lines 8-13.

in the second mode, whereas it outputs signals from the PC 20 and the TV/video 22, which are PIP processed, to be displayed in the third mode.<sup>8</sup>

A pure signal from the PC 20, a signal from the TV/video 22 or a PIP signal that is the combined signals from the PC 20 and the TV/video 22, is displayed on the CDT 29.<sup>9</sup>

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

A. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheney et al. U.S. Pat. No. 6,519,283 (hereinafter Cheney'283) and Cheney et al. U.S. Patent No. 6,469,743 (hereinafter Cheney'743) for the reasons stated in the Final Office Action (Paper no. 20050507).

## **VII. ARGUMENT**

A. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheney et al. U.S. Pat. No. 6,519,283 and Cheney et al. U.S. Patent No. 6,469,743.

### 1. Claims 1, 6, 10

The Examiner states that concerning claim 1, an output unit (e.g., the output 110 of Fig. 4) directly connected to said digital to analog converter (directly connected to DENC 107 of Fig. 4) and connected to said signal dispensing unit (connected to the computer TV output for receiving the analog video signal 104 from the computer TV output unit which dispenses the analog video

---

<sup>8</sup>Original Specification, paragraph 18, page 7, line 13-page 8, line 3.

<sup>9</sup>Original Specification, paragraph 19, page 8, lines 4-6.



signal) of said personal computer, receiving said first analog signal from said signal dispensing unit

The Examiner admits that is unclear whether Cheney'283 teaches an outputting unit directly connected to said signal dispensing unit of said personal computer.

However, the Examiner argues that Cheney'283 discloses that the analog video signal 104 is received by the decoder system chip 100 and directly being forwarded to the output 110 because Cheney'283 discloses in column 7, lines 19-38 that the host processor can set the pixel select control to (3) support picture-in-picture display, dynamically selecting both the decompressed and uncompressed video for display and in mode (3), switching between decompressed and uncompressed video for simultaneous display is done at a rate according to the desired location of the secondary picture 72. Although, the Examiner admits that the output 110 is not visually directly connected to the signal dispensing unit, there is a direct mechanism/connection between the signal source (i.e., the computer signal having TV output) and the output 110 so that the video signal is being forwarded and that forwarding means that the video signal from the dispensing unit is being directly sent to the output unit 110.

However, Cheney '283 does not only "not clearly" teach a direct connection between the outputting unit and the dispensing unit, but simply fails to make such a teaching. Looking at figure 4, it is clear that reference 110 has no direct connection with a dispensing unit for a personal computer as signal 104 which is connected to 105 is not directly connected to an outputting unit. There must be an actual direct connection and not a conjecture of forwarding means, which if used is no longer "direct connection." There is no actual teaching or suggestion being made.

The Examiner argues that the video signal is being forwarded and that forwarding means that the video signal from the dispensing unit is being directly sent to the output unit 110. However, the claim indicates a “direct” physical connection between an outputting unit and the dispensing unit and a signal being forwarded through different units is clearly not the same.

The Examiner goes on to argue that Cheney’743 teaches an outputting unit outputting said analog personal computer signal generated from said signal dispensing unit, where said signal dispensing unit dispenses an output signal output from a personal computer in the form of an analog signal (See Cheney’743 column 11-12).

However, Cheney ‘743 also does not teach a direct connection between the personal computer dispensing unit and the outputting unit. As mentioned in MPEP §706.02(j), the prior art reference (or references when combined) must teach or suggest all the claim limitations. Here it is clear that not all the limitations are disclosed.

In addition, the Federal Circuit has mentioned that “we look to see whether combined teachings render the claimed subject matter obvious.” *In re Wood*, 599 F.2d 1032, 202 USPQ 171, 174 (CCPA 1979) (citing *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549-50 (CCPA 1969); *In re Mapelsden*, 329 F.2d 321, 322, 141 USPQ 30, 32 (CCPA 1964). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991), MPEP §706.02(j). Here, there is no actual teaching or even suggestion of a direct connection between the dispensing unit and the outputting unit as seen for example in Figures 9, 12

and 13 of Cheney '743, which only shows the video decode system chip 200 connected to the digital multistandard decoder 250 and graphics controller 240. There is no direct connection between the personal computer dispensing unit and the outputting unit to accommodate the pure signal along with the other signals.

The claim is stating specifically "direct connection" and not "similar to direct connection" or kind of like direct connection or approximately direct connection or even just connection. The language is clear that it is "direct connection" and the combined teachings of Cheney '283 and Cheney '743 fail to teach or suggest such a limitation. The structure used by the Examiner with Cheney '283 and Cheney '743 to show a functional equivalent to direct connection may still have problems such as signal loss or other degradation of the signal, however small that may be, it will still affect the circuit. Therefore, one cannot assume from the language that the connection is actually a direct connection when clearly as the Examiner admits, there is no direct connection in the figures of the combined references. The figures of Cheney '283 and Cheney '743 clearly contradicts a direct connection as claimed.

Moreover, the Examiner refers to reference 110 as an outputting unit, but 110 is only the output signal as mentioned in Cheney '283 by col. 6, line 50. This is clearly not an outputting unit as also seen in figure 4 as the reference 110 merely refers to the output arrow from the DENC 107 to the television.

In paper no. 20051130, the Examiner argues that output 110 of Cheney '283 indicates an

output unit as claimed and since Cheney '743 discloses delivering analog sourced input channel to the internal DENC and providing mixed mode video set-top box application to support viewing conventional analog channels. However, simply stating to the television, does not mean that it is a unit for delivery of the signals as claimed, but rather only the signal coming from the DENC 107. Therefore, in actuality, there is no output unit as claimed, but rather a signal coming from the DENC 107 which the Examiner refers to as the D/A converter. Therefore, the reference cannot possibly teach or suggest an output unit that outputs the signals as claimed from the different units.

In addition, as seen in figure 4 of Cheney '283, there is no output unit directly connected to both the D/A converter and directly connected to the signal dispensing unit of the personal computer. The Examiner states that the DENC 107 is the D/A converter, but it only receives a signal from the video decoder, display and OSD 106 and 110 simply shows the output of the DENC only. Therefore, there is no outputting unit that has the connections as claimed. Cheney '743 has an internal DENC 225 in the video decode system 200, but again there is no separate outputting unit that accepts the direct connections from the dispensing unit of a computer and the direct connection of the D/A converter.

## 2. Claims 6, 16

The combination of Cheney '283 and '743 fail to teach or suggest the first analog signal being sent to the switching unit without conversion as in claim 6 or the original first analog signal as in claim 16. In claim 6, the Examiner argues that Cheney'283 teaches a method for processing

a signal, the first analog signal is sent to the switching unit without conversion.

The Examiner argues that although the output 110 is not visually directly connected to the signal dispensing unit, there is a direct mechanism/connection between the signal source, i.e., the computer signal having TV output, and the output 110 so that the video signal is being forwarded. The Examiner argues that the forwarding means that the video signal from the dispensing unit is being directly sent to the output unit 110), with the first analog signal being sent to said switching unit (“said switching unit” lacks antecedent basis) without conversion (column 7, lines 19-38).

However, col. 7, lines 19-38 is a modified video decoder from figure 4 so there is an on screen display , which then modifies from the other portions the Examiner are disclosed. Moreover, col. 7, lines 19-38 talks of forwarding the decompressed video and the uncompressed video through a MUX which does not mean that it is without conversion or that is directly sent to the outputting unit which the Examiner refers to as reference 110.

The MUX 202 of figure 5 concerns the modification of the video decoder/display and OSD logic 106 of figure 4. Therefore, the MUX 202 concerns the signal before going to the DENC 107 and outputted as 110, rather than the signals coming from a converter unit and personal computer to the switching unit. The arrows in figures 4 and 5 show the signal path in Cheney ‘283 where the signal goes from the video decoder, display and OSD 106 to the DENC 107.

In addition, the MUX of Cheney ‘743 in figure 3 are also not as claimed by the present invention. Therefore, the combination of references fail to teach or suggest the limitations of claim 6.

### 3. Claims 6, 10

Concerning claims 6 and 10, the signal 104 which the Examiner refers to be coming from the dispensing unit which is not disclosed, does not send to both the A/D converter and the outputting/ switching unit. Figure 4 of Cheney '283 only discloses the signal 104 going to the television decoder 105.

In addition, the MUX 202 of figure 5 shows to the contrary as the signal to the MUX 202 is blended with the OSD 204 and then is sent to the DENC 107. If it is argued that the MUX 202 receives the unconverted signal, then it cannot be also argued that such a switching unit outputs the converted signal from the DENC 107 as the path of figures 4 and 5 shows that it does not.

According to MPEP §2145, "It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). This portion of Cheney '238 cannot be just ignored because according to MPEP §2141.02, "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)." Therefore, looking at the references as a whole, the input into the MUX 202 and OSD blend 204 figure 5 cannot be used separately, especially since Cheney '238 indicates the connection to the video decoder, display and OSD 106 of figure 4.

#### 4. Claims 1, 2, 10, 16

Further concerning claims 1, 2 and 10 in addition to above arguments for claims 1 and 6, the actual signal dispensing unit is not disclosed by the combination of references. The Examiner refers to a signal of a television signal from a personal computer, but it is only the signal that is disclosed. There is no disclosure of the dispensing unit and its particular connections in relations to the other units as it is directly connected to the analog to digital converter and/or directly connected to the outputting unit and the direct connection or embodiment within the personal computer. The actual structure must be taught or suggested and a simple statement of the signal is not enough to teach or suggest all the different connections a unit has according to MPEP §706.02(j).

#### 5. Claims 17 and 18

Concerning claims 17 and 18, there is no signal dispensing unit directly connected to the switching unit as shown above. The Examiner clearly admits that Cheney '283 does not clearly show such a limitation and neither does Cheney '743. Figures 4 and 5 of Cheney '283 show that such does not exist. Moreover, there is no actual disclosure of the dispensing unit itself with its connections in relation with the personal computer, the converter and the switching unit.

#### 6. Claim 19

Concerning claim 19, the references fail to teach or suggest the signal processing unit being directly connected to the second converter unit or the second converter unit being directly connected

to the switching unit. It is clear that by looking at Cheney '283 in figures 3-6, col. 7, lines 19-67, col. 8, lines 1-67, col. 9, lines 1-8 and figure 5 do not teach or suggest such a connection.

Respectfully, the Examiner failed to discuss how such direct connections are taught or suggested by the references.

Therefore, the Examiner has failed to provide a *prima facie* case of obviousness.

#### 7. Claim 20

Concerning claim 20, the references fail to teach or suggest the scan rate conversion unit directly connected between the decoding unit and the signal processing unit. Cheney'283 in figures 5-6, col. 7, lines 19-67, col. 8, lines 1-67 and col. 9, lines 1-8 fails to teach or suggest such direct connections and the Examiner, respectfully, failed to address the limitation in its entirety. Rather the Examiner only stated the conversion of signals as an indicator of the direct connection, but this does not logically mean that there is a direct connection. Figures 5 and 6 of Cheney '283 clearly do not teach such a direct physical connection.



Respectfully submitted,



Robert E. Bushnell,  
Attorney for the Applicant  
Registration No.: 27,774

1522 "K" Street N.W, Suite 300  
Washington, D.C. 20005  
(202) 408-9040

Folio: P56597  
Date: 2/6/06  
I.D.: REB/SS

## VIII. CLAIMS APPENDIX

### CLAIMS UNDER APPEAL (1-20)

1           1. (Previously Presented) An apparatus for processing a signal, comprising:  
2           a signal dispensing unit dispensing a first personal computer signal output from a personal  
3 computer in the form of a first analog signal directly from said personal computer;  
4           an analog to digital converter converting the first analog signal from said signal dispensing  
5 unit of said personal computer to a first digital signal of said personal computer;  
6           a signal processing unit performing picture-in-picture signal processing enabling one of the  
7 first digital personal computer signal dispensed by said signal dispensing unit through said analog  
8 to digital converter and a decoded second signal as a second digital signal input from an outside  
9 source to be displayed on a main screen and the other to be displayed on at least one sub-screen, and  
10 said signal processing unit processing said second digital signal to be displayed alone on said main  
11 screen, said second digital signal being any one of a television signal and a video signal;  
12           a digital to analog converter converting a digital output signal of said signal processing unit  
13 into a second analog signal;  
14           an outputting unit directly connected to said digital to analog converter and directly  
15 connected to said signal dispensing unit of said personal computer, receiving said first analog signal  
16 from said signal dispensing unit and said second analog signal from said digital to analog converter  
17 converting said digital output signal from said signal processing unit, outputting the first analog

18 signal dispensed from said signal dispensing unit in response to a control signal for displaying only  
19 the first personal computer signal, and outputting said second analog signal from said digital output  
20 signal of said signal processing unit in response to a control signal for displaying the first personal  
21 computer signal and said second signal in picture-in-picture format; and

22 a monitor amplifying the signal output from said outputting unit to be displayed.

1 2. (Previously Presented) The apparatus of claim 1, further comprised of the first analog  
2 signal being outputted from said signal dispensing unit being included in said personal computer,  
3 with said personal computer sending the first analog signal to said analog to digital converter being  
4 directly connected to said signal dispensing unit of said personal computer, and said personal  
5 computer sending the first analog signal to said outputting unit being directly connected to said  
6 signal dispensing unit of said personal computer.

1 3. (Previously Presented) The apparatus of claim 1, with said signal processing unit,  
2 comprising:

3 a decoding unit converting said second signal into a digital signal and decoding said second  
4 signal;

5 a scan rate conversion unit converting a scan rate of said decoded second signal as the second  
6 digital signal; and

7 a signal processing unit performing a picture-in-picture signal process on said second signal  
8 whose scan rate is converted and said first digital personal computer signal, accommodating one of

9 said second digital signal and said first digital personal computer signal is displayed on said main  
10 screen and the other of said second digital signal and said first digital personal computer signal is  
11 displayed on the plurality of sub-screens, or for processing said second signal to be displayed alone  
12 on said main screen.

1 4. (Previously Presented) The apparatus of claim 1, with said decoded second signal input  
2 from an outside source, further comprising:

3 a decoding unit converting said second signal into a digital signal and decoding said second  
4 signal; and

5 a scan rate conversion unit converting a scan rate of said decoded second signal.

1 5. (Previously Presented) The apparatus of claim 2, with said decoded second signal input  
2 from an outside source, further comprising:

3 a decoding unit converting said second signal into a digital signal and decoding said first  
4 signal; and

5 a scan rate conversion unit converting a scan rate of said decoded second signal and  
6 outputting the second digital signal.

1 6. (Previously Presented) A method for processing a signal, comprising the steps of:

2 dispensing an output signal of a first analog signal directly from a personal computer;

3 sending the first analog signal to both a conversion unit and an outputting unit, with the first

4 analog signal being sent to a switching unit without conversion;

5 converting the first analog signal to a first digital signal through said conversion unit;

6 performing picture-in-picture signal processing enabling one of a first digital signal of said  
7 personal computer generated by the step of dispensing said output signal of said first analog signal  
8 and a decoded second signal input from an outside source to be displayed on a main screen and the  
9 other to be displayed on at least one sub-screen, and processing said second signal to be displayed  
10 alone on said main screen, said second signal being any one of a television signal and a video signal;

11 outputting from said switching unit, said first analog signal directly from said personal  
12 computer signal generated from the step of dispensing an output signal in response to a control signal  
13 for displaying only said first analog signal from said personal computer, and outputting an output  
14 signal of the step of performing picture-in-picture signal processing in response to a control signal  
15 for displaying said first analog signal of said personal computer and said second signal in picture-in-  
16 picture format;

17 amplifying the signal output from said switching unit; and

18 displaying said amplified signal output.

1 7. (Previously Presented) The method of claim 6, further comprising the step of converting  
2 said picture-in-picture signal output from the step of performing picture-in-picture signal processing  
3 into a second analog signal from a digital output signal of said signal processing unit before the  
4 signal is output from the step of outputting from said switching unit.

1           8. (Previously Presented) The method of claim 6, with said decoded second signal input from  
2 an outside source, further comprising:

3           converting said second signal into a second digital signal and decoding said second signal;  
4 and  
5           converting a scan rate of said decoded second signal.

1           9. (Previously Presented) The method of claim 7, with said decoded second signal input from  
2 the outside source, further comprising:

3           converting said second signal into a second digital signal and decoding said second signal;  
4 and  
5           converting a scan rate of said decoded second signal.

1           10. (Previously Presented) An apparatus for processing a signal, comprising:  
2 a personal computer generating an output signal accommodating a display of an image  
3 generated by said personal computer;

4           a signal dispensing unit dispensing said output signal from said personal computer directly  
5 to both an outputting unit and a converting unit;

6           a converting unit converting the output signal from an original first analog signal from said  
7 personal computer to a first digital signal of said personal computer;

8           a signal processing unit performing picture-in-picture signal processing enabling one of said  
9 output signal from said personal computer signal dispensed by said signal dispensing unit and a

10 decoded video signal input from an outside source to be displayed on a main screen and the other  
11 to be displayed on at least one sub-screen, and said signal processing unit processing said video  
12 signal to be displayed alone on said main screen;

13 an outputting unit outputting the original first analog signal generated from and sent directly  
14 from said personal computer signal dispensed from said signal dispensing unit in response to a  
15 control signal for displaying only said personal computer signal, and outputting an output signal of  
16 said signal processing unit in response to a control signal for displaying said personal computer  
17 signal and said video signal in picture-in-picture format; and

18 a monitor amplifying and displaying said signal output from said outputting unit.

1 11. (Previously Presented) The apparatus of claim 10, further comprising a signal conversion  
2 unit converting said picture-in-picture signal output from said signal processing unit from a digital  
3 signal into a second analog signal before a signal is output from said outputting unit.

1 12. (Previously Presented) The apparatus of claim 10, with said decoded video signal input  
2 from the outside source, further comprising:

3 a decoding unit converting said video signal into a digital signal and decoding said video  
4 signal; and

5 a scan rate conversion unit converting a scan rate of said decoded video signal.

1 13. (Previously Presented) The apparatus of claim 12, with said decoded video signal input

from the outside source, further comprising:

a decoding unit converting said video signal into a digital signal and decoding said video signal; and  
a scan rate conversion unit converting a scan rate of said decoded video signal.

14. (Previously Presented) The apparatus of claim 10, further comprised of said video signal being selected from the group consisting of a television video signal and a non-broadcasted video signal.

15. (Previously Presented) The apparatus of claim 10, further comprising:  
a digital to analog converter unit converting said output signal generated from said signal processing unit from a digital signal into an analog signal for said outputting unit and not converting said original first analog signal from said personal computer to said outputting unit and displaying on said monitor said original first analog signal without converting said original first analog signal to a digital signal from said personal computer.

16. (Previously Presented) An apparatus for processing a signal, comprising:  
a signal dispensing unit dispensing an original first analog signal output from a personal computer to a switching unit and to a first converter unit;  
said first converter unit converting the first analog signal from said signal dispensing unit to a first digital signal;



6 a signal processing unit performing picture-in-picture signal processing enabling one of the  
7 first digital signal from said first converter and a decoded second signal as a second digital signal  
8 input from an outside source to be displayed on a main screen and the other to be displayed on at  
9 least one sub-screen, and said signal processing unit processing said second digital signal to be  
10 displayed alone on said main screen, said second digital signal being any one of a television signal  
11 and a video signal;

12 a second converter converting a digital output signal of said signal processing unit into a  
13 second analog signal;

14 said switching unit connected to said second converter and connected to said signal  
15 dispensing unit of said personal computer, receiving said first analog signal from said signal  
16 dispensing unit and said second analog signal from said second converter, said switching unit  
17 outputting the first analog signal dispensed from said signal dispensing unit in response to a control  
18 signal for displaying only the original first analog signal, and outputting said second analog signal  
19 from said second converter unit in response to a control signal for displaying the first analog signal  
20 and said second signal in picture-in-picture format; and

21 a monitor amplifying a third analog signal output from said switching unit to be displayed.

1 17. (Previously Presented) The apparatus of claim 16, further comprised of said signal  
2 dispensing unit of said personal computer being directly connected to said switching unit.

1 18. (Previously Presented) The apparatus of claim 16, further comprised of:

2           said signal dispensing unit of said personal computer being directly connected to said  
3           switching unit; and

4           said signal dispensing unit of said personal computer being directly connected to said first  
5           converter unit.

1           19. (Previously Presented) The apparatus of claim 18, further comprised of:

2           said signal processing unit being directly connected to said second converter unit; and

3           said second converter unit being directly connected to said switching unit.

1           20. (Previously Presented) The apparatus of claim 18, further comprised of:

2           a decoding unit converting said second signal from the outside source into said second digital  
3           signal and decoding said second signal; and

4           a scan rate conversion unit directly connected between said decoding unit and said signal  
5           processing unit and converting a scan rate of said decoded second digital signal output directly to  
6           said signal processing unit.

**CLAIMS SUBMITTED IN AMENDMENT FILED WITH APPEAL BRIEF**

1           1. (Previously Presented) An apparatus for processing a signal, comprising:  
2           a signal dispensing unit dispensing a first personal computer signal output from a personal  
3           computer in the form of a first analog signal directly from said personal computer;  
4           an analog to digital converter converting the first analog signal from said signal dispensing  
5           unit of said personal computer to a first digital signal of said personal computer;  
6           a signal processing unit performing picture-in-picture signal processing enabling one of the  
7           first digital personal computer signal dispensed by said signal dispensing unit through said analog  
8           to digital converter and a decoded second signal as a second digital signal input from an outside  
9           source to be displayed on a main screen and the other to be displayed on at least one sub-screen, and  
10          said signal processing unit processing said second digital signal to be displayed alone on said main  
11          screen, said second digital signal being any one of a television signal and a video signal;  
12          a digital to analog converter converting a digital output signal of said signal processing unit  
13          into a second analog signal;  
14          an outputting unit directly connected to said digital to analog converter and directly  
15          connected to said signal dispensing unit of said personal computer, receiving said first analog signal  
16          from said signal dispensing unit and said second analog signal from said digital to analog converter  
17          converting said digital output signal from said signal processing unit, outputting the first analog  
18          signal dispensed from said signal dispensing unit in response to a control signal for displaying only

19 the first personal computer signal, and outputting said second analog signal from said digital output  
20 signal of said signal processing unit in response to a control signal for displaying the first personal  
21 computer signal and said second signal in picture-in-picture format; and  
22 a monitor amplifying the signal output from said outputting unit to be displayed.

1 2. (Previously Presented) The apparatus of claim 1, further comprised of the first analog  
2 signal being outputted from said signal dispensing unit being included in said personal computer,  
3 with said personal computer sending the first analog signal to said analog to digital converter being  
4 directly connected to said signal dispensing unit of said personal computer, and said personal  
5 computer sending the first analog signal to said outputting unit being directly connected to said  
6 signal dispensing unit of said personal computer.

1 3. (Previously Presented) The apparatus of claim 1, with said signal processing unit,  
2 comprising:

3 a decoding unit converting said second signal into a digital signal and decoding said second  
4 signal;

5 a scan rate conversion unit converting a scan rate of said decoded second signal as the second  
6 digital signal; and

7 a signal processing unit performing a picture-in-picture signal process on said second signal  
8 whose scan rate is converted and said first digital personal computer signal, accommodating one of  
9 said second digital signal and said first digital personal computer signal is displayed on said main

10 screen and the other of said second digital signal and said first digital personal computer signal is  
11 displayed on the plurality of sub-screens, or for processing said second signal to be displayed alone  
12 on said main screen.

1 4. (Previously Presented) The apparatus of claim 1, with said decoded second signal input  
2 from an outside source, further comprising:

3 a decoding unit converting said second signal into a digital signal and decoding said second  
4 signal; and

5 a scan rate conversion unit converting a scan rate of said decoded second signal.

1 5. (Previously Presented) The apparatus of claim 2, with said decoded second signal input  
2 from an outside source, further comprising:

3 a decoding unit converting said second signal into a digital signal and decoding said first  
4 signal; and

5 a scan rate conversion unit converting a scan rate of said decoded second signal and  
6 outputting the second digital signal.

1 6. (Currently Amended) A method for processing a signal, comprising the steps of:  
2 dispensing an output signal of a first analog signal directly from a personal computer;  
3 sending the first analog signal to both a conversion unit and ~~an outputting a switching unit,~~  
4 with the first analog signal being sent to [[a]] said switching unit without conversion;

5           converting the first analog signal to a first digital signal through said conversion unit;  
6           performing picture-in-picture signal processing enabling one of a first digital signal of said  
7           personal computer generated by the step of dispensing said output signal of said first analog signal  
8           and a decoded second signal input from an outside source to be displayed on a main screen and the  
9           other to be displayed on at least one sub-screen, and processing said second signal to be displayed  
10          alone on said main screen, said second signal being any one of a television signal and a video signal;  
11          outputting from said switching unit, said first analog signal directly from said personal  
12          computer signal generated from the step of dispensing an output signal in response to a control signal  
13          for displaying only said first analog signal from said personal computer, and outputting an output  
14          signal of the step of performing picture-in-picture signal processing in response to a control signal  
15          for displaying said first analog signal of said personal computer and said second signal in picture-in-  
16          picture format;  
17          amplifying the signal output from said switching unit; and  
18          displaying said amplified signal output.

1           7. (Previously Presented) The method of claim 6, further comprising the step of converting  
2           said picture-in-picture signal output from the step of performing picture-in-picture signal processing  
3           into a second analog signal from a digital output signal of said signal processing unit before the  
4           signal is output from the step of outputting from said switching unit.

1           8. (Previously Presented) The method of claim 6, with said decoded second signal input from

an outside source, further comprising:

converting said second signal into a second digital signal and decoding said second signal;

and

converting a scan rate of said decoded second signal.

9. (Previously Presented) The method of claim 7, with said decoded second signal input from the outside source, further comprising:

converting said second signal into a second digital signal and decoding said second signal;

and

converting a scan rate of said decoded second signal.

10. (Previously Presented) An apparatus for processing a signal, comprising:

a personal computer generating an output signal accommodating a display of an image generated by said personal computer;

a signal dispensing unit dispensing said output signal from said personal computer directly to both an outputting unit and a converting unit;

a converting unit converting the output signal from an original first analog signal from said personal computer to a first digital signal of said personal computer;

a signal processing unit performing picture-in-picture signal processing enabling one of said output signal from said personal computer signal dispensed by said signal dispensing unit and a decoded video signal input from an outside source to be displayed on a main screen and the other

11 to be displayed on at least one sub-screen, and said signal processing unit processing said video  
12 signal to be displayed alone on said main screen;

13 an outputting unit outputting the original first analog signal generated from and sent directly  
14 from said personal computer signal dispensed from said signal dispensing unit in response to a  
15 control signal for displaying only said personal computer signal, and outputting an output signal of  
16 said signal processing unit in response to a control signal for displaying said personal computer  
17 signal and said video signal in picture-in-picture format; and

18 a monitor amplifying and displaying said signal output from said outputting unit.

1 11. (Previously Presented) The apparatus of claim 10, further comprising a signal conversion  
2 unit converting said picture-in-picture signal output from said signal processing unit from a digital  
3 signal into a second analog signal before a signal is output from said outputting unit.

1 12. (Previously Presented) The apparatus of claim 10, with said decoded video signal input  
2 from the outside source, further comprising:

3 a decoding unit converting said video signal into a digital signal and decoding said video  
4 signal; and

5 a scan rate conversion unit converting a scan rate of said decoded video signal.

1 13. (Previously Presented) The apparatus of claim 12, with said decoded video signal input  
2 from the outside source, further comprising:



3 a decoding unit converting said video signal into a digital signal and decoding said video  
4 signal; and

5 a scan rate conversion unit converting a scan rate of said decoded video signal.

1 14. (Previously Presented) The apparatus of claim 10, further comprised of said video signal  
2 being selected from the group consisting of a television video signal and a non-broadcasted video  
3 signal.

1 15. (Previously Presented) The apparatus of claim 10, further comprising:  
2 a digital to analog converter unit converting said output signal generated from said signal  
3 processing unit from a digital signal into an analog signal for said outputting unit and not converting  
4 said original first analog signal from said personal computer to said outputting unit and displaying  
5 on said monitor said original first analog signal without converting said original first analog signal  
6 to a digital signal from said personal computer.

1 16. (Previously Presented) An apparatus for processing a signal, comprising:  
2 a signal dispensing unit dispensing an original first analog signal output from a personal  
3 computer to a switching unit and to a first converter unit;  
4 said first converter unit converting the first analog signal from said signal dispensing unit to  
5 a first digital signal;  
6 a signal processing unit performing picture-in-picture signal processing enabling one of the

7 first digital signal from said first converter and a decoded second signal as a second digital signal  
8 input from an outside source to be displayed on a main screen and the other to be displayed on at  
9 least one sub-screen, and said signal processing unit processing said second digital signal to be  
10 displayed alone on said main screen, said second digital signal being any one of a television signal  
11 and a video signal;

12 a second converter converting a digital output signal of said signal processing unit into a  
13 second analog signal;

14 said switching unit connected to said second converter and connected to said signal  
15 dispensing unit of said personal computer, receiving said first analog signal from said signal  
16 dispensing unit and said second analog signal from said second converter, said switching unit  
17 outputting the first analog signal dispensed from said signal dispensing unit in response to a control  
18 signal for displaying only the original first analog signal, and outputting said second analog signal  
19 from said second converter unit in response to a control signal for displaying the first analog signal  
20 and said second signal in picture-in-picture format; and

21 a monitor amplifying a third analog signal output from said switching unit to be displayed.

1 17. (Previously Presented) The apparatus of claim 16, further comprised of said signal  
2 dispensing unit of said personal computer being directly connected to said switching unit.

1 18. (Previously Presented) The apparatus of claim 16, further comprised of:

2 said signal dispensing unit of said personal computer being directly connected to said

3 switching unit; and

4 said signal dispensing unit of said personal computer being directly connected to said first  
5 converter unit.

1 19. (Previously Presented) The apparatus of claim 18, further comprised of:

2 said signal processing unit being directly connected to said second converter unit; and

3 said second converter unit being directly connected to said switching unit.

1 20. (Previously Presented) The apparatus of claim 18, further comprised of:

2 a decoding unit converting said second signal from the outside source into said second digital  
3 signal and decoding said second signal; and

4 a scan rate conversion unit directly connected between said decoding unit and said signal  
5 processing unit and converting a scan rate of said decoded second digital signal output directly to  
6 said signal processing unit.

## **IX. EVIDENCE APPENDIX**

### **References cited by both Applicant and the Examiner**

1. U.S. Patent No. 6,519,283 to Cheney et al., issued on 11 February 2003.<sup>10</sup>
2. U.S. Patent No. 6,469,743 to Cheney et al., issued on 22 October 2002.<sup>11</sup>

## **X. RELATED PROCEEDINGS APPENDIX**

None.

---

<sup>10</sup> Office action (Paper No. 6) mailed on 28 August 2003

<sup>11</sup> Office action (Paper No. 20041028) mailed on 16 November 2004